REMARKS

The amendments to claims 28 and 46 are supported by claims 30 and 50, respectively; claims 30 and 50 have been cancelled. No new matter has been added. Upon entry of this amendment, claims 28, 29, 31, 32, 34, 45-49 and 51-54 are present and active in the application.

Applicants thank Examiner Gray for the courteous and helpful discussion held with applicants' representatives on May 28, 2009. During this discussion, it was noted the incorporation of claims 30 and 50 into the independent claims would advance the case.

Request for Reconsideration

Activated carbon does not resist temperatures higher than 573 K in an oxidative atmosphere. Therefore, it had been thought to be inapplicable to use activated carbon as a substrate fiber for fabrication processes requiring high temperature calcination, such as the manufacturing of ceramic coated fibers. The present invention is based on the discovery that, despite this instability at high temperatures, activated carbon can be used as a template in the formation of ceramic coated fibers.

The activated carbon coated fibers are infiltrated with ceramic precursors by immersion in a solution of one or more ceramic precursors in a volatile solvent. The excess precursor is removed, and the infiltrated precursor may be hydrolyzed by exposure to the moisture in the air, yielding a composite of carbon and the precursor or the hydrolyzed precursor. The system is then subjected to a heat treatment, which may remove residual solvent, cure the precursor, as well as remove the activated carbon, and crystallize the ceramic. The carbon substrate may also be oxidized by irradiation of the fibers, or by treatment with chemical oxidizers. As now claimed, the ceramic accounts for 10 to 90% by weight of the ceramic coated fibers.

The rejection of the claims under 35 U.S.C. § 103(a) over Cai et al. (U.S. Pat. No. 6,680,279) in view of Sowards et al. (U.S. Pat. No. 3,518,206) is

respectfully traversed. The applied references only suggest fibers containing an amount of ceramic far less than 10 % by weight of the ceramic coated fiber.

Cai et al. discloses a method of dispersing nanosized catalyst particles on the surface of larger carrier particles (abstract). Nanometer-sized particles of catalytic noble metals, such as platinum, are dispersed, or coated, on the surfaces of larger carrier particles. The carrier particles are preferably of alumina or alumina that incorporates metal oxides (col. 2, lines 17-33).

The coating process is a dry mixing process, not requiring the use of water or any other constituent to accomplish the coating of the catalyst particles on the carrier particles (col. 2, lines 56-57). The product catalyst particle/carrier particle is in the form of a powder (col. 2, lines 66-67). The powder can be coated on support structures such as ceramic fibers or carbon fibers (col. 3, lines 4-6). Specifically, Examples 2 and 3 (col. 6, line 53 to col. 10, line 50) describe the coating of ceramic fibers with alumina particles. There is no indication of amounts of ceramic to be coated on the fibers. There is no description how to vary the dry coating process to control the amount of ceramic coated on the fibers, or any effect which results from varying the amount of ceramic. Only the examples provide any information regarding the amount of ceramic coated on the fibers: Example 2 starts with 3% by weight of alumina (col. 6, lines 53-56); comparative example 2 uses 5% by weight of alumina (col. 7, lines 36-40); Example 3 uses 6.5% by weight of alumina; and comparative example 3 uses 5.5% by weight of alumina (col. 9, lines 1-6).

Sowards et al. discloses the coating of substrates or supports with colloidal amorphous silica (Sowards et al., abstract). A suitable silica sol is prepared with silica spherulites having an average diameter of about 5 to 150 μm (col. 4, lines 37-63). The support is then coated with the silica sol by immersion, spraying, and the like. The support is drained and dried, and the process is repeated until the desired thickness of coating is obtained (col. 4, lines 69-75). Calcination of the coating may follow to provide a durable coating which is uniform and strongly adherent to the support (col. 7, lines 2-5). The coating may

include a granular, porous inorganic material. Suitable granular porous materials include alumina, magnesia and zirconia (col. 7, lines 30-31).

The structure coated is an aluminum honeycomb in the shape of a square parallelepiped 4" x 6" x ½"; the cells have a diameter of 1/8", and the aluminum has a thickness of 0.002 inch (col. 9, lines 45-53). There is no description of amounts of ceramic in the coated structures, only total coating weight (ceramic and silica). In the examples only a fraction of the coating is ceramic, the remainder being silica and catalyst. No guidance is provided on an amount of ceramic which should be used to coat fibers, or what effect varying the amount of ceramic would provide.

As claimed, the ceramic accounts for 10 to 90% by weight of the ceramic coated fiber. Only the examples in Cai et al. provide any information regarding the amount of ceramic coated on the fibers: Example 2 starts with 3% by weight of alumina; comparative example 2 uses 5% by weight of alumina; Example 3 uses 6.5% by weight of alumina; and comparative example 3 uses 5.5% by weight of alumina. How to vary this amount, or what result such variation would provide, is not taught. Sowards et al. coats only an aluminum honeycomb in the shape of a square parallelepiped 4" x 6" x ½" in size; no guidance for, or effect of, varying the ceramic content of the final structure (as opposed to the amount of coating) is provided. Accordingly, without some effect which would result from varying the amount of ceramic in the ceramic coated fibers, there would be no reason to dramatically increase the amount of ceramic in the coated fibers of Cai et al. The claimed invention is not obvious over the applied references. Withdrawal of this ground of rejection is respectfully requested.

CONCLUSION

All of the grounds raised in the present Office Action for rejecting the application are believed to be overcome or rendered moot based on the remarks above. Thus, it is respectfully submitted that all of the presently presented claims are in form for allowance, and such action is requested. Should the Examiner feel a discussion would expedite the prosecution of this application, the Examiner is kindly invited to contact the undersigned at (312) 876-1400.

Respectfully submitted,

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